

# Work Order ID 73459

Thursday, September 01, 2011 7:33:17 AM



Page 1

Item ID: D3688-3

Accept



Setup Start



Revision ID:

Item Name: STUD

Stop



Start Date: 8/31/2011 Start Qty: 6.00



Cust Item ID:

Required Date: 9/16/2011 Req'd Qty: 6.00



Customer:

Reference:

Approvals:

Process Plan:

*CL*

Date: 11/09/01

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D3688	Rev C								

100

0.00



BAND SAW

Bandsaw

Memo

0.00

*and 11/10/17*

*6*

Jeaspa Bandsaw

\*\*\*DO NOT USE CHOP SAW\*\*\*

☐ Cut blank 9.424" long

110

0.00



DOOSAN LATHE

Doosan

Memo

0.00

*5*

Doosan Lathe

1-Turn as per Folio FA717 Rev: *AA* & Dwg D3688 Rev: *C*  
per dwg D3688  
3-Check .625" bore with DT9530 GO/NO GO Gauge

☐ 2-Deburr

*SD 11/10/17*

*P10*

120

0.00



QC2- Inspect parts off machine FAI/FAIB

QC

Memo

0.00

*SD 11/10/17*

*5*

Quality Control

Dart Aerospace Ltd

W/O: 73459		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: D36883 PAR #: N/A Fault Category: Machining NCR: Yes No    DQA:    Date: 11.11.03  
11-947 Resolution: Scrap use as-is Disposition: Scrap use as-is QA: N/C Closed Date: 11/11/04

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
11/10/17	110	entered 0.035 in offsets instead of 0.0035 on threads too small <u>operator error</u>	S 11/10/18 AS2042	scrap and no replace	S 11/10/17	and 11/10/18	S AS2042 11/10/18	S 11/10/18
11.10.18	110	Thread has minor <u>  </u> marks from tool vibration  <u>LOA</u>	GP 11.10.18 AS1042	Acceptable. Thread still engages smoothly.	and 11/10/18	S 11/10/18	GP 11.10.18 AS1042	S 11/10/18

NOTE: Date & initial all entries

[REDACTED]

Page 2

**Accept**

\_\_\_\_\_

**Setup Start**

**Stop**

11-11-11

**Cust Item ID:**

**Required Date:** 9/16/2011      **Req'd Qty:** 6.00

**Customer:**

**Reference:**

Run Start

**Approvals:**      **Process Plan:** \_\_\_\_\_ **Date:** \_\_\_\_\_ **Tooling:** \_\_\_\_\_ **Date:** \_\_\_\_\_

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

**Stop**

### Operation Description

### Set Up/ Run Hours

Tool ID

**Tool #****Plan  
Code**

**Accept  
Qty**

Reject  
Qty

## Reject Number

**Insp.  
Stamp**

QC8- Inspect parts - second check

0.00

**Abstract**

QC

## Quality Control

## Memo

0.00

100% CHECK,CHECK ALL DIMENSIONS AND THREAD FIT

## PURCHASING

0.00

[illegible]

Purchasing

## Purchasing

## Memo

0.00

Issue P/O: 15240 ☐ LPI Per ASTM 1417 LEVEL  
2 ☐ Certificate of conformity is required

Receive & Inspect for Damage & Mat'l Certs

0.00

[illegible]

### Packaging

## Packaging

## Memo

0.00

Ensure certificate of conformity is attached

**Dart Aerospace Ltd**

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

**Part No:** \_\_\_\_\_ **PAR #:** \_\_\_\_\_ **Fault Category:** \_\_\_\_\_ **NCR:** Yes No **DQA:** \_\_\_\_\_ **Date:** \_\_\_\_\_  
**Resolution:** \_\_\_\_\_ **Disposition:** \_\_\_\_\_ **QA: N/C Closed:** \_\_\_\_\_ **Date:** \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

**Work Order ID 73459**

Page 3

Thursday, September 01, 2011 7:33:17 AM

Item ID: D3688-3

Accept



Setup Start



Revision ID:

Item Name: STUD

Stop



Start Date: 8/31/2011 Start Qty: 6.00



Cust Item ID:

Required Date: 9/16/2011 Req'd Qty: 6.00



Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Run Start



QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

200	QC5- Inspect part completeness to step on W/O	0.00							
-----	---	------	--	--	--	--	--	--	--



QC	Memo	0.00							
----	------	------	--	--	--	--	--	--	--

Quality Control

W	1	10	25	(5)
---	---	----	----	-----

210	Identify as per dwg & Stock Location <del>SA</del>	0.00							
-----	--	------	--	--	--	--	--	--	--



Packaging	Memo	0.00							
-----------	------	------	--	--	--	--	--	--	--

Packaging

11/10/24	5	(5)
----------	---	-----

220	QC21- Final Inspection - Work Order Release	0.00							
-----	---	------	--	--	--	--	--	--	--



QC	Memo	0.00							
----	------	------	--	--	--	--	--	--	--

Quality Control

11/10/28	(5)
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11-10-28	(5)
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**Dart Aerospace Ltd**

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

# Picklist Print

Thursday, September 01, 2011 7:33:14 AM

Page 1

Work Order ID: 73459



Parent Item: D3688-3



Parent Item Name: STUD

Start Date: 8/31/2011

Required Date: 9/16/2011

Start Qty: 6.00

Required Qty: 6.00

Comments: Rev:A New Issue 08-01-29 JLM Verified By:EC  
IPP Rev:B Material Change 09-01-07 JLM Verified By:EC  
IPP Rev:C Added note on Step 2 09-01-26 JLM Verified By:EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
M174PH-H900R1.000		Purchased		No		100	f	32.7000	0.788	4.976842			
17-4SS H900 ROUND BAR 1.00													

Location

Loc Qty

Loc Code

MAT030

32.7

117445

32.7

M117446

x 49.5'

only 11/16/17

**Dart Aerospace Ltd**

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries



<b>DART AEROSPACE LTD</b>		<b>Work Order:</b>	73459
<b>Description: Stud</b>		<b>Part Number:</b>	D3688-3
<b>Inspection Dwg: D3688 Rev: C</b>		<b>Page 1 of 1</b>	

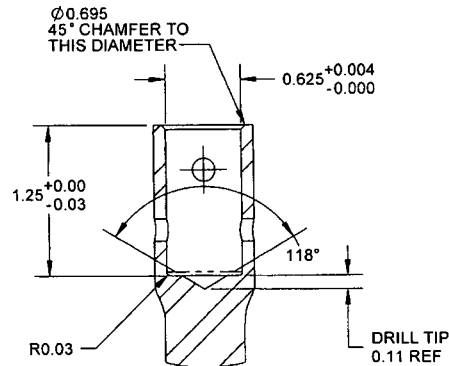
### FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article ☐ Prototype

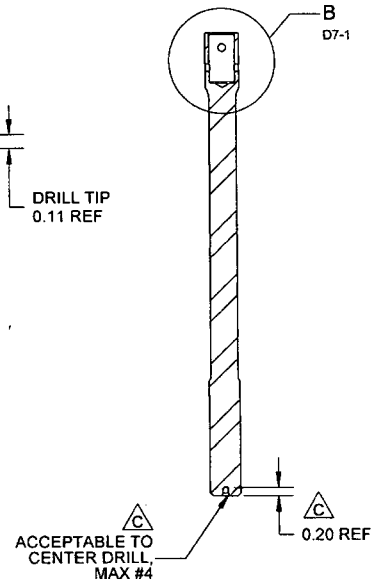
Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
Ø0.695	+/-0.010	0.700	/			
0.625	+0.004/-0.000	0.627	/			
1.25	+0.000/-0.03	1.235	/			
118°	0.5°	118	/			
R0.03	+/-0.030	R.03	/			
0.11 Ref	+/-0.030	0.11	/			
90°	0.5°	90°	/			
Ø0.189	+0.005/-0.001	0.191	/			
1.31	+/-0.030	1.31	/			
1.65	+/-0.030	1.65	/			
0.870	+0.000/-0.010	0.866	/			
Ø0.659	+0.000/-0.015	0.650	/			
9.324	+/-0.015	9.334	/			
2.90	+/-0.030	2.720	/			
3/4-16UNF-2A	N/A		/			
0.075 x 45°	+/-0.010 x 0.5°	0.075 x 45°	/			
0.370	+0.000/-0.010	0.366	/			
Ø0.189	+0.005/-0.001	0.191	/			
R0.25	+/-0.030	R.25	/			
R0.50	+/-0.030	R.50	/			

<b>Measured by:</b>	SA	<b>Audited by:</b>	CMR	<b>Prototype Approval:</b>	N/A
<b>Date:</b>	11/10/38	<b>Date:</b>	11/10/38	<b>Date:</b>	N/A

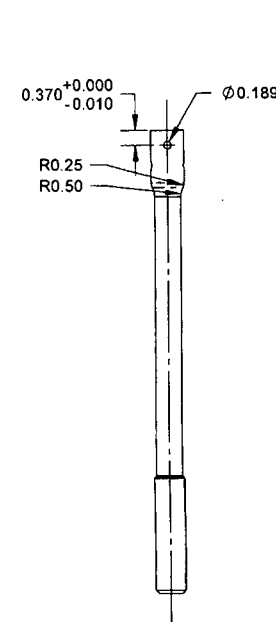
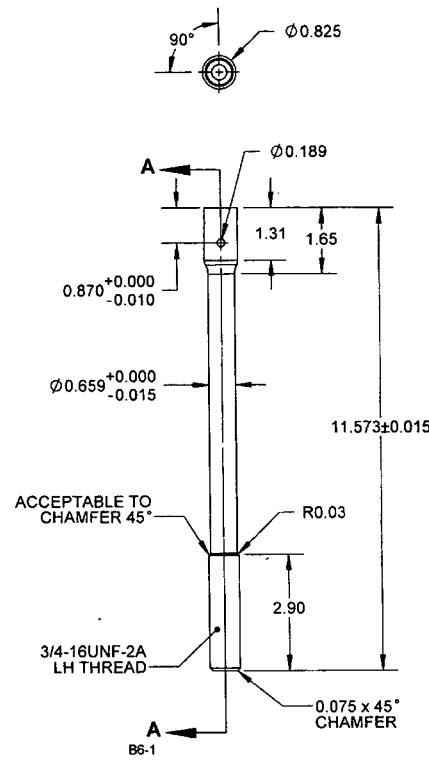
Rev	Date	Change	Revised by	Approved
A	09.05.11	New Issue	KJ	
B	09.11.04	Dwg Rev updated	KJ	



**DETAIL B**  
SCALE 3X  
D6-1



**SECTION A-A**  
D4-1



**RELEASED**  
2009-09-22

**NOTES:**

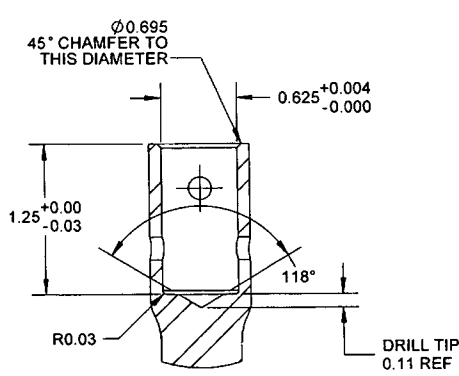
- 1) MATERIAL: 17-4PH STAINLESS STEEL ROUND BAR PER AMS 5643 H-900 CONDITION
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 1.24 lb
- 8) LPI PER QSI 038 4.1.1 (ASTM E1417 LEVEL 2)

**D3688-1 STUD**

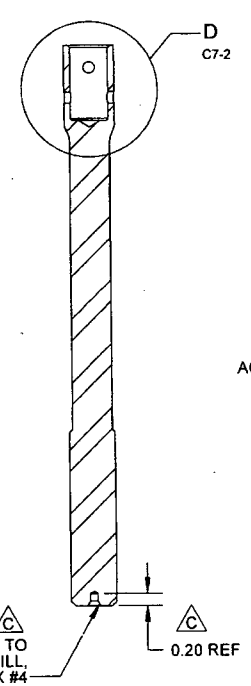
SHOP COPY  
RETURN TO  
ENGINEERING  
UNCONTROLLED COPY  
SUBJECT TO AMENDMENT  
WITHOUT NOTICE  
WORK ORDER  
NO. 73459

C	0.20 WAS 0.16 (ZN B5-1, B5-2, B6-3, B5-4); CENTER DRILL #4 WAS CENTER DRILL #2 (ZN B6-1, B6-2, B6-3, B6-4); UPDATE NOTE 8 TO REF QSI (ZN A8-1, A8-2, A8-3, A8-4)	RF	09.09.09
B	CHANGE TO 17-4PH H-900 (ZN A8-1, A8-2, A8-3, A4-4); REDUCE LENGTH ON D3688-1 FROM 12.073 TO 11.573 (ZN C3-1) BASED ON PROTOTYPE INSTALL: 0.695 WAS 0.665 (ZN D8-1, D8-2, D8-3); 0.508 WAS 0.478 (ZN D8-4); REFORMATTED TO CURRENT DWG STANDARDS	RF	08.11.24
A	NEW ISSUE	RF	08.05.22
REV.	DESCRIPTION	BY	DATE
DESIGN	RF	<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA	
DRAWN	RF		
CHECKED	97	DRAWING NO.	REV. C
MFG. APPR.	21	D3688	SHEET 1 OF 4
APPROVED	14	TITLE	SCALE
DE APPR.	14	STUD	NTS
DATE	09.09.09	COPYRIGHT © 2008 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD	

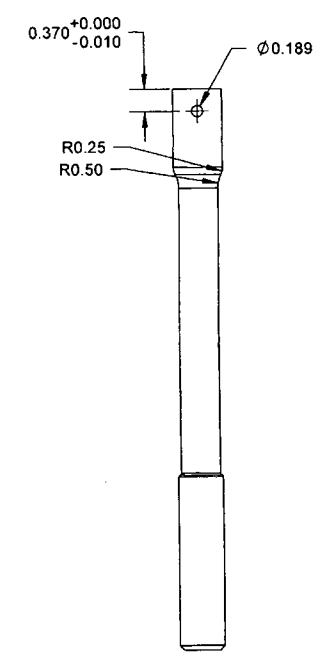
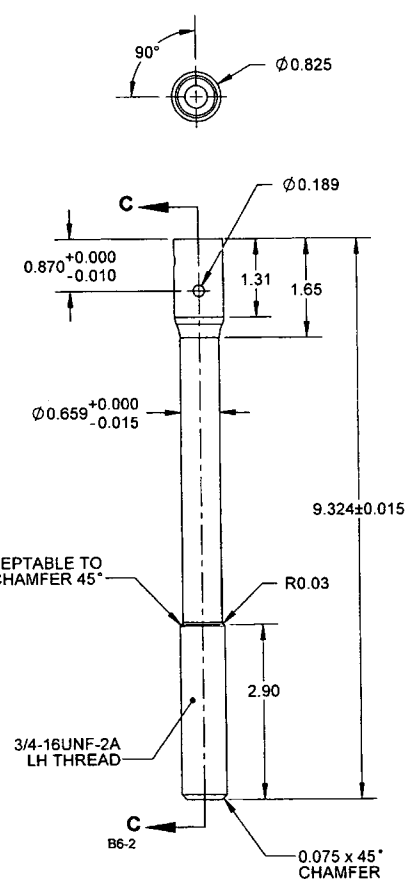
8 7 6 5 4 3 2 1



**DETAIL D**  
SCALE 2X  
D6-2



**SECTION C-C**  
D4-2



**D3688-3 STUD**

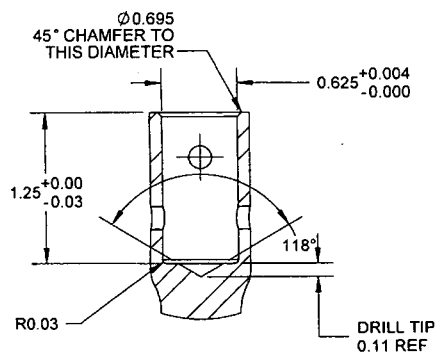
**RELEASED**  
2009-09-22

- NOTES:**
- 1) MATERIAL: 17-4PH STAINLESS STEEL ROUND BAR PER AMS 5643 H-900 CONDITION
  - 2) FINISH: NONE
  - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
  - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
  - 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
  - 6) IDENTIFICATION: NONE
  - 7) WEIGHT: 0.97 lb
  - 8) LPI PER QSI 038 4.1.1 (ASTM E1417 LEVEL 2)

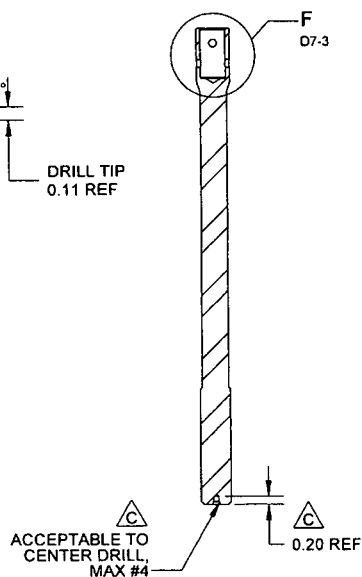
DESIGN	RF	<b>DART AEROSPACE LTD</b>	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	<i>97</i>	DRAWING NO.	REV. C
MFG. APPR.	<i>21</i>	<b>D3688</b>	SHEET 2 OF 4
APPROVED	<i>42</i>	TITLE	SCALE
DE APPR.	<i>11</i>	<b>STUD</b>	NTS
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8 7 6 5 4 3 2 1

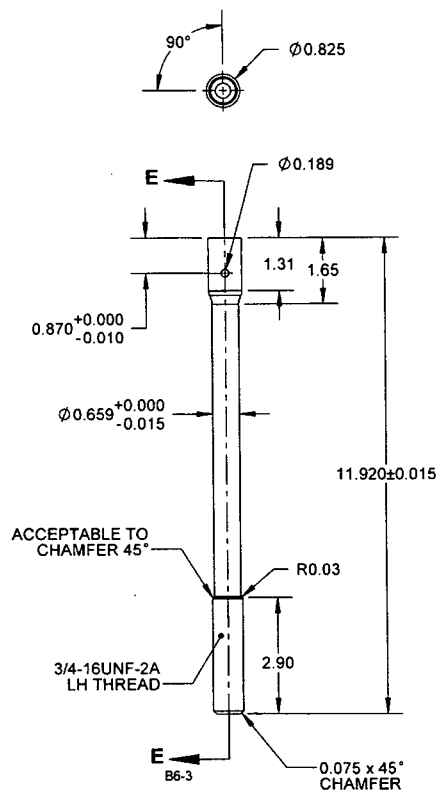
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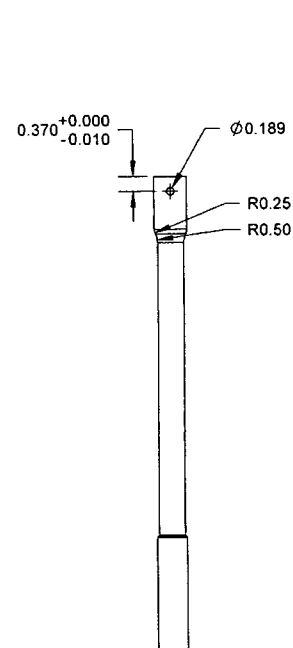
**DETAIL F**  
SCALE 3X  
D6-3



**SECTION E-E**  
D4-3



**D3688-5 STUD**



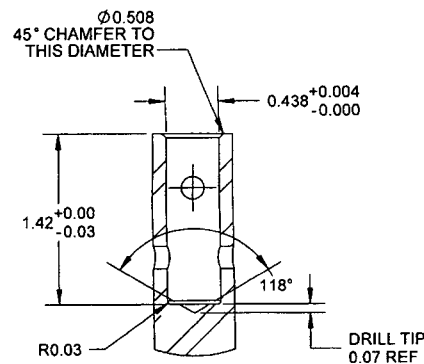
**RELEASED**  
2009-09-22

**NOTES:**

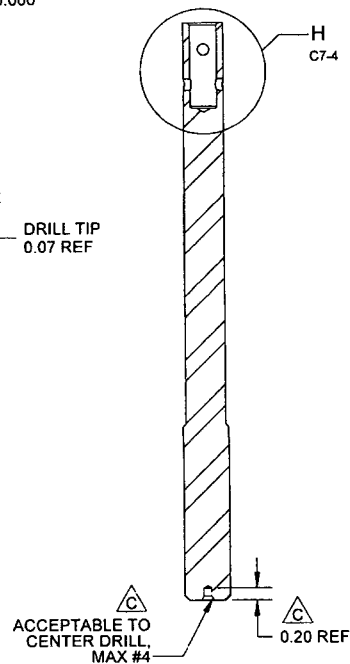
- 1) MATERIAL: 17-4PH STAINLESS STEEL ROUND BAR PER AMS 5643 H-900 CONDITION
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 1.28 lb
- 8) LPI PER QSI 038 4.1.1 (ASTM E1417 LEVEL 2)

DESIGN	RF	<b>DART AEROSPACE LTD</b>	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	<i>97</i>	DRAWING NO.	REV. C
MFG. APPR.	<i>97</i>	D3688	SHEET 3 OF 4
APPROVED	<i>97</i>	TITLE	SCALE
DE APPR.	<i>97</i>	STUD	NTS
DATE	09.09.09	COPYRIGHT © 2008 BY DART AEROSPACE LTD	
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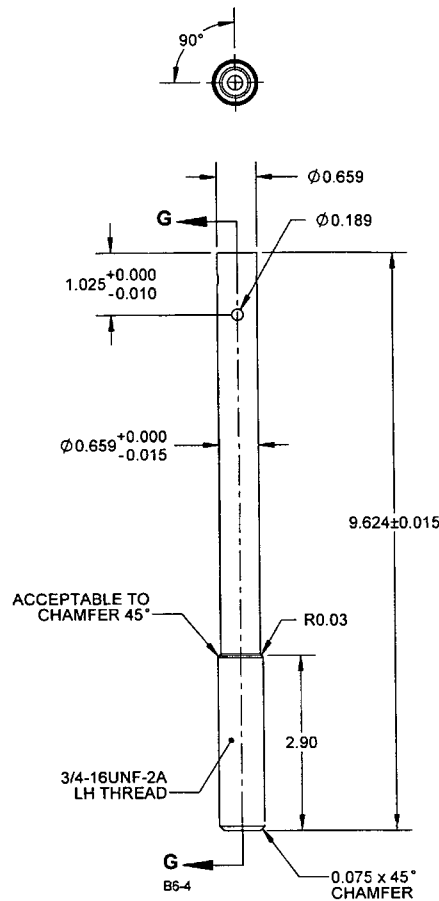
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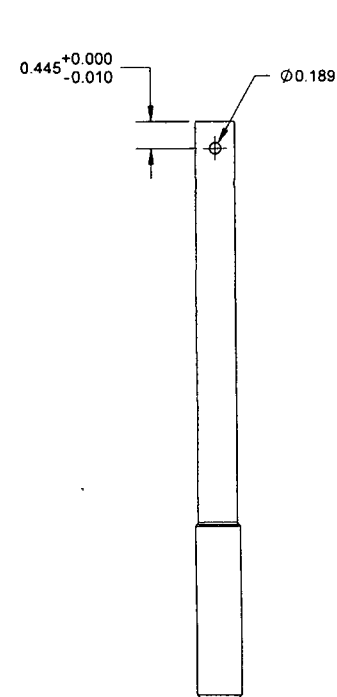
**DETAIL H**  
SCALE 2X  
D6-4



**SECTION G-G**  
D4-4



**D3688-7 STUD**



**RELEASED**  
2009-09-22

**NOTES:**

- 1) MATERIAL: 17-4PH STAINLESS STEEL ROUND BAR PER AMS 5643 H-900 CONDITION
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 0.97 lb
- 8) LPI PER QSI 038 4.1.1 (ASTM E1417 LEVEL 2)

DESIGN	RF	<b>DART AEROSPACE LTD</b>	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	91	DRAWING NO.	REV. C
MFG. APPR.	21	D3688	SHEET 4 OF 4
APPROVED	14	TITLE	SCALE
DE APPR.	#	STUD	NTS
DATE	09.09.09	COPYRIGHT © 2008 BY DART AEROSPACE LTD	
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**ACUREN****RAPPORT D'INSPECTION PAR RESSUAGE****P-11784**PAGE **1** DE **1**

CLIENT

**Dart Aerospace.**

DATE

**24 Oct. 2011**

HEURE

AM ☒ PM ☐

ATTENTION

**Mme. Dinda Lincelle.**N° TRAVAIL  
ACUREN**183-11-02375**

ADRESSE

**1270 Aberdeen St. Hokenbury  
Ont. K6A 1K7**

N° CLIENT PO/WO

**15240**

SITE DE TRAVAIL

**Dart usine.**

ACCEPTATION STD.

**1417/031 038**

DATE/RÉV.

**05**

PROJET

**Cross tubes inspection and stud.**

ITEM(S) EXAMINÉ

**6 x Cross tubes and 5 x studs****DESCRIPTION DES TRAVAUX**

N° PROCÉDURE

LT-002 DATE/RÉV.

**2007**

N° TECHNIQUE

LT-002 DATE/RÉV.

**2007**

N° ITEMS

MATÉRIEL **Aluminium / Steel** ÉPAISSEUR **Différent**

DESCRIPTION

**100% Inspection (Liquid Penetrant) on surface (external)  
on cross tubes (6) and surface external on stud (5)****DÉTAILS DES INSPECTIONS**

MÉTHODE :

☒ FLUORESCENT☐ VISIBLE☒ LAVABLE À L'EAU☐ MÉTHODE DISSOLVANT☐ PRÉ-ÉMULSIONNANT

MARQUE :

**Magnaflux**LUM. NOIRE S/N **16440**☐ PUISS. > 1000 µ W/cm²☐ AMBIANT < 2 fc

PÉNÉTRANT :

**Zyglo ZL67**

TEMPS PÉNÉTRATION MIN.

**10**

ÉQUIP. LUMIÈRE

☐ LAMP. POCHE☐ LAMP. CULASSE

DISSOLVANT PÉNÉTRANT

**H2O**

TEMPS SÉCHAGE MIN.

**>10**AUTRES **LABINO (MODEL)**

RÉVÉLATEUR

**SKD-52**

TEMPS PÉNÉTRATION MIN.

**10**

MÈTRE LUM. N/S

DATE CAL DUE

TYPE RÉVÉLATEUR

☒ NON AQUEUX☐ AQUEUX☐ SEC**SURFACE INSPECTÉE**

CONDITION SURFACE

☐ MEULÉE☐ SOUDÉE☐ MACHINÉE☐ GRENAILLÉE☒ MÉTAL PROPRE

TEMPÉRATURE SURFACE

☐ < - 4°C / 20°F☐ - 4°C / 20°F DE 10°C / 50°F☒ 10°C / 50°F DE 52°C / 125°F☐ > 52°C / 125°F**RÉSULTATS-**☐ MÉTRIQUE ☐ IMPÉRIAL

COMPTABLES				ADDITIONNELS			
1	Cross tube	WO/ID	74977	✓	Item ID	D212-664-107	
1	"	"	74993	✓	"	"	"
1	"	"	74978	✓	"	"	"
1	"	"	74975	✓	"	"	"
1	"	"	74965	✓	"	D206 667 203	
1	"	"	75209	✓	"	<del>D206 667 203</del> D212-664-107	
5	Studs	WO/ID	73459	✓	"	D 3688-3	

**11/10/25****Étendue des Services**

L'entente selon laquelle le Groupe Acuren Inc. exécute les services ne concerne que les énoncés par écrit. En aucune circonstance ces services ne s'étendent au-delà de l'exécution des services demandés. Il est entendu que toutes les descriptions, les observations et les expressions d'opinions faites par Acuren reflètent les opinions ou les observations de l'entreprise fondées sur l'information et les hypothèses fournies par le propriétaire/opérateur, et elles ne constituent pas des déclarations ou des garanties ou ne peuvent être interprétées comme constituant. Le Groupe Acuren Inc. n'assume aucune des responsabilités du propriétaire/opérateur, et le propriétaire/opérateur conserve la responsabilité entière des décisions prises en matière d'ingénierie, de fabrication, de réparation et d'usage à partir de l'information ou des données fournies par Acuren en rapport avec les services décrits dans les présentes ne peuvent excéder le coût des services rendus.

**Norme de Diligence**

Dans l'exécution des services, le Groupe Acuren Inc. applique le degré de diligence, le soin et la compétence normalement exercés dans des circonstances semblables par d'autres fournisseurs de ce type de services opérant dans la même localité ou dans une localité similaire. Aucune autre garantie, implicite ou explicite, n'est faite ou voulue par le Groupe Acuren Inc.

**SIGNATURES**

REPRÉSENTANT

TECHNICIEN (SIGNATURE)

NOM (MOULÉ):

ONGC NIVEAU

**2** SNT NIVEAU

ONGC NIVEAU

SNT NIVEAU

ONGC N° REG.

**12205**

ONGC N° REG.

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RAPPORT  
RÉVISÉ PAR:

NOM

INITIALES